AMENDMENTS TO THE CLAIMS

Please cancel claims 1-6, 8, 11, 12, 14-16, 19, 21-31, and 33-39 without prejudice to further prosecution in a divisional, continuation, continuation-in-part or other application. Please amend claims 7, 9, 10, 13, and 18 as follows:

1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Canceled)

6. (Canceled)

7. (Currently Amended) An ~~The~~ apparatus ~~of claim 3~~ for producing a Bragg grating in an optical fiber, the apparatus ~~further~~ comprising:

first resonator means; ~~and~~

second resonator means;

means for controlling a Ti:sapphire laser to produce an output laser beam having a wavelength in the range of approximately 230 to 250 nanometers, wherein the Ti:sapphire laser is disposed within the first resonator means, and wherein the controlling means comprises:

means for pumping the Ti:sapphire laser with a second harmonic pump beam; and

means for producing a third harmonic of a laser beam emitted by the Ti:sapphire laser, wherein ~~and~~ at least a portion of the third harmonic producing means is disposed within the second resonator means; and

means for using the output laser beam to produce the Bragg grating in the optical fiber.

8. (Canceled)

9. (Currently Amended) An ~~The~~ apparatus ~~of claim 5~~ for producing a Bragg grating in an optical fiber, the apparatus comprising:

means for controlling a Ti:sapphire laser to produce an output laser beam having a wavelength in the range of approximately 230 to 250 nanometers, wherein the controlling means further comprises:

first resonator means; ~~and~~

second resonator means, ~~and~~ wherein the Ti:sapphire laser is disposed within the first resonator means; ~~and~~

means for pumping the Ti:sapphire laser with a second harmonic pump beam;

tripling means for generating a third harmonic beam from the second harmonic pump beam, wherein the tripling means is disposed within the second resonator means; and

means for mixing the third harmonic beam with a beam emitted by the Ti:sapphire laser; and

means for using the output laser beam to produce the Bragg grating in the optical fiber.

10. (Currently Amended) An ~~The~~ apparatus ~~of claim 6~~ for producing a Bragg grating in an optical fiber, the apparatus comprising:

means for controlling a Ti:sapphire laser to produce an output laser beam having a wavelength in the range of approximately 230 to 250 nanometers, wherein the controlling means further comprises:

first resonator means;

second resonator means;

a diode laser for pumping the Ti:sapphire laser with a second harmonic pump beam; and

third resonator means, wherein the third harmonic means further comprises frequency doubling means and frequency tripling means, and wherein the frequency doubling means is disposed within the second resonator means and the frequency tripling means is disposed within the third resonator means; and

means for using the output laser beam to produce the Bragg grating in the optical fiber.

11. (Canceled)

12. (Canceled)

13. (Currently Amended) An ~~The~~ apparatus ~~of claim 12~~ for producing a Bragg grating in an optical waveguide, the apparatus comprising:

a solid state laser comprising a Ti:sapphire crystal for producing an output laser beam having a wavelength in the range of approximately 230 to 250 nanometers, wherein the solid state laser further comprises:

an active laser medium;

a pump for pumping the active laser medium to produce a fundamental beam;

a first nonlinear crystal for producing a second harmonic pump beam from the fundamental beam, wherein the Ti:sapphire crystal is pumped by the second harmonic pump beam;

a second nonlinear crystal for producing a second harmonic beam from a fundamental beam emitted by the Ti:sapphire crystal; and

a third nonlinear crystal for producing a third harmonic beam by mixing the fundamental beam and the second harmonic beam; and

a Bragg writer for using the output laser beam to produce the Bragg grating in the optical waveguide.

14. (Canceled)

15. (Canceled)

16. (Canceled)

17. (Original) The apparatus of claim 13, wherein the solid state laser further comprises:

a first resonator; and

a second resonator, wherein the Ti:sapphire crystal is disposed within the first resonator and wherein the second nonlinear crystal is disposed within the second resonator.

18. (Currently Amended) The apparatus of claim 17, wherein the solid state laser further comprises a third resonating cavity, and wherein said third nonlinear crystal is disposed within the third resonating cavity.

19. (Canceled)

20. (Original) A method for producing a Bragg grating in an optical waveguide, the method comprising:

pumping an active laser medium to generate a fundamental pump beam;

doubling a frequency of the fundamental pump beam to generate a second harmonic pump beam;

pumping a Ti:sapphire crystal with the second harmonic pump beam;

generating a third harmonic beam from the second harmonic pump beam;

mixing the third harmonic beam with a beam emitted by the Ti:sapphire crystal to produce an output beam having a wavelength in the range of approximately 230 to 250 nanometers; and

using the output beam to produce the Bragg grating in the optical waveguide.

21. (Canceled)

22. (Canceled)

23. (Canceled)

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Canceled)

28. (Canceled)

29. (Canceled)

30. (Canceled)

31. (Canceled)

32. (Previously Presented) An apparatus for producing a Bragg grating in an optical waveguide, the apparatus comprising:

a solid state laser comprising a Ti:sapphire laser medium, wherein the solid state laser emits an output beam having a wavelength in the range of approximately 230 to 250 nanometers; and

a phase mask interferometer for using the output beam to produce the Bragg grating in the optical waveguide, wherein the phase mask interferometer comprises means for rotating the optical waveguide.

33. (Canceled)

34. (Canceled)

35. (Canceled)

36. (Canceled)

37. (Canceled)

38. (Canceled)

39. (Canceled)

40. (Original) An apparatus for producing a Bragg grating in an optical waveguide, the apparatus comprising:

a solid state laser comprising a Ti:sapphire laser medium, wherein the solid state laser emits an output beam having a wavelength in the range of approximately 230 to 250 nanometers; and

phase mask projection means for using the output beam to produce the Bragg grating in the optical waveguide.

41. (Original) An apparatus for producing a Bragg grating in an optical waveguide, the apparatus comprising:

a laser medium;

a pump for stimulating the laser medium to emit a fundamental pump beam;

a doubler crystal for doubling the frequency of the fundamental beam to produce a second harmonic pump beam;

a solid state laser comprising a Ti:sapphire laser medium which is pumped by the second harmonic pump beam to emit a fundamental beam;

at least one nonlinear crystal for producing a harmonic beam from the fundamental beam, the harmonic beam having a wavelength in the range of approximately 230 to 250 nanometers;

a processor;

means for actuating wavelength control elements according to control signals from the processor;

means for measuring a wavelength of the harmonic beam and for sending a measurement signal to the processor;

a control for sending a wavelength signal to the processor, the wavelength signal indicating a desired wavelength of the harmonic beam; and

Bragg writing means for using the harmonic beam to produce the Bragg grating in the optical waveguide, wherein the processor controls the rotation means and the temperature control means such that an actual wavelength of the harmonic beam is within a predetermined number of nanometers of the desired wavelength.

42. (Original) The apparatus of claim 41, wherein the wavelength control elements are selected from the group consisting of gratings, prisms, etalons and birefringent filters.